Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A battery separator comprising:

a nonwoven flat sheet having a high temperature melt integrity;

a microporous membrane having low temperature shutdown properties; and

an adhesive bonding said nonwoven flat sheet to said microporous membrane ~~and being adapted for swelling when contacted by an electrolyte~~, said adhesive being a swellable polymer selected from the group consisting of polyvinylidene fluoride; polyurethane; polyethylene oxide; polyacrylonitrile; polyacrylamide; polyvinyl acetate; polyvinylpyrrolidone; polytetraethylene glycol diacrylate; copolymers of any the foregoing and combinations thereof.

2. (Currently amended) The battery separator of claim 1 wherein ~~said adhesive further comprises a swellable polymer~~ membrane being made from a thermoplastic polymer.

3. (Currently amended) The battery separator of claim ~~2 wherein said swellable polymer being selected from the group consisting of polyvinylidene fluoride, polyurethane, polyethylene oxide, polyacrylonitrile, polymethylacrylate, poly(methylmethacrylate), polyacrylamide, polyvinyl acetate, polyvinylpyrrolidone, polytetraethylene glycol diacrylate, copolymers of any the foregoing and combinations thereof~~ 1 wherein said nonwoven flat sheet being made of polymers selected from the group consisting of thermoplastic polymers, cellulosic, and/or ceramics.

4. (Currently amended) ~~The battery separator of claim 1 wherein the~~ A battery separator comprising:

a nonwoven flat sheet having a high temperature melt integrity;

a microporous membrane having low temperature shutdown properties; and

an adhesive bonding said nonwoven flat sheet to said microporous membrane, said adhesive comprises a swellable polymer and a wetting agent.

5. (Original) The battery separator of claim 4 wherein said swellable polymer being selected from the group consisting of polyvinylidene fluoride; polyurethane; polyethylene oxide; polyacrylonitrile; polymethylacrylate; poly(methylmethacrylate);

polyacrylamide; polyvinyl acetate; polyvinylpyrrolidone; polytetraethylene glycol diacrylate; copolymers of any the foregoing and combinations thereof.

6. (Original) The battery separator of claim 4 wherein said wetting agent being selected from the group consisting of phthalate-based esters, cyclic carbonates, polymeric carbonates, and mixtures thereof.

7. (Currently amended) The battery separator of claim ~~1~~ 4 wherein said membrane being made from a thermoplastic polymer.

8. (Original) The battery separator of claim 7 wherein said thermoplastic polymer being selected from the group consisting of polystyrenes, polyvinyl chlorides, polyacrylics, polyacetals, polyamides, polycarbonates, polyesters, polyetherimides, polyimides, polyketones, polyphenylene ethers, polyphenylene sulfides, polysulfones.

9. (Currently amended) The battery separator of claim ~~1~~ 4 wherein said nonwoven flat sheet being made of polymers selected from the group consisting of thermoplastic polymers, cellulosic, and/or ceramics.

10. (Currently amended) ~~The battery separator of claim 1 wherein~~ A battery separator comprising:

a nonwoven flat sheet having a high temperature melt integrity, said nonwoven flat sheet further comprising a coating or surface treatment;

a microporous membrane having low temperature shutdown properties; and

an adhesive bonding said nonwoven flat sheet to said microporous membrane.

11. (Original) The battery separator of claim 10 wherein said coating or surface treatment being a ceramic material.

12. (Original) The battery separator of claim 11 wherein said ceramic material being selected from the group of alumina, silica, and zirconia compounds and combinations thereof.

13. (Original) A battery made with separator of claim 1.

14. (Currently amended) Method of making separator comprising the steps of

providing a nonwoven flat sheet,

providing a microporous membrane,

providing an adhesive solution comprising a solvent, ~~and~~ a swellable polymer, and a wetting agent,

coating said sheet or said membrane or both said sheet and membrane with the adhesive solution,

laminating together the nonwoven flat sheet and the membrane, and

forming thereby the separator.

15. (Canceled) ~~The method of claim 14 wherein the adhesive solution comprises a solvent, a swellable polymer, and a wetting agent.~~

16. (Original) The method of claim 14 wherein laminating further comprises applying temperature of about 120 - 135°C.

17. (Original) The method of claim 14 further comprising washing the laminated separator with a solvent.

18. (New) The battery separator of claim 10 wherein said nonwoven flat sheet being made of polymers selected from the group consisting of thermoplastic polymers, cellulosic, and/or ceramics.

19. (New) The battery separator of claim 10 wherein said membrane being made from a thermoplastic polymer.

20. (New) The battery separator of claim 10 wherein said thermoplastic polymer being selected from the group consisting of

polystyrenes, polyvinyl chlorides, polyacrylics, polyacetals, polyamides, polycarbonates, polyesters, polyetherimides, polyimides, polyketones, polyphenylene ethers, polyphenylene sulfides, polysulfones.